



NUTRICARE

Evidence-Based Nutrition Toolkit for Cancer Survivors



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Overview

A cancer survivor is anyone living with, through, and beyond a cancer diagnosis. Advances in cancer treatment have led to a rapidly growing population of cancer survivors. It has become increasingly important to improve the long-term health of cancer survivors through healthy eating and active living. While cancer survivors are highly motivated to seek information about dietary changes to improve their long-term health, many report that they do not have access to evidence-based nutrition recommendations, and their nutrition intake patterns remain poor. This gap between a desire for improved health and poor dietary habits highlights the strong need for cancer survivors to have access to evidence-based nutrition recommendations. This toolkit has been designed to address this need. The sources of evidence used to create this toolkit are outlined in section 9.





THIS TOOLKIT CAN BE USED BY:

- Cancer patients and survivors
- Family members and caregivers of cancer patients and survivors

THE GOALS OF THIS TOOLKIT ARE TO:

- Educate survivors about their nutrition care needs before, during and after treatment
- Provide tips and strategies that can be implemented into daily life to help improve the nutritional intake and diet quality of cancer survivors

You don't have to read all the information in this toolkit, instead read through the sections you need and the information that applies directly to you.

The information in this guide is not intended to replace your medical team. If you have any questions or concerns you should talk to your doctor, nurse, or dietitian about these. A registered dietitian is the best source of information about your diet.





Contents

Why Is Nutrition Important for Someone Who Has Survived Cancer?	1
How Does Cancer Treatment Impact My Eating Patterns?	2
Strategies for Managing Eating Problems During Cancer Treatment	3
Nausea	3
Vomiting	3
Appetite change	4
Mouth sore	5
Mouth dry	5
Difficulty swallowing	6
Constipation	6
Diarrhea	7
Fatigue	7
Maintaining A Healthy Weight During and After Cancer Treatment	8
Weight Management Goals for Cancer Survivors	8
What is the body mass index (BMI)?	8
Weight categories	9
Unwanted weight loss	10
Unwanted weight gain	10
Healthy Eating and Active Living After Cancer Treatment: Nutrition Recommendations for Cancer Survivors	12
Dietary patterns	12
Fruits and vegetables	12
Whole grains	12
Nuts, seeds, and legumes	13
Red meats and processed meats	13
Fish and seafood	13
Dairy	13
Saturated fat	13
Added sugars	13





Sodium	14
Alcohol	14
Physical activity	14
Supplement use	14

Frequently Asked Nutrition Questions by Cancer Survivors **15**

Session 1: Plant-Based Diet **16**

What is a plant-based diet?	16
What does a plant-based diet look like?	16
Why are cancer survivors recommended to eat a plant-based diet?	17

Session 2: Fruits and Vegetables **18**

What are recommended amounts of fruits and vegetables that are best for my health?	18
What is a serving of fruits or vegetables?	18
What are recommended kinds of fruits and vegetables that are best for my health?	19
Starchy vs. non-starchy	19
Forms	19
Color	19
The rainbow of fruits and vegetables	20
Adding more servings of fruits or vegetables	21
Is juicing beneficial for my health?	22
Can I get the equivalent benefits of fruits and vegetables with dietary supplements?	22

Session 3. Fiber and Whole Grains **23**

What are the benefits of eating a diet rich in fiber and whole grains?	23
Where is fiber in my diet?	23
What are whole grains and whole-grain foods?	23
How do I find whole grains and whole-grain foods?	24
Identifying whole-grain foods	26

Session 4: Dairy **28**

Why are dairy foods important for cancer survivors?	28
What counts as 1 serving of dairy?	28
What are the recommendations for dairy foods for cancer survivors?	29
What if I am lactose intolerant or choose not to consume dairy?	30

Session 5: Protein **31**

Why is protein important for cancer survivors?	31
What is the recommended daily amount of protein foods (plant and animal sources)?	32
What are protein foods and what counts as 1 ounce equivalent in the protein foods?	32





Session 6: Animal-Based Proteins	34
What are recommendations of animal-based protein sources for cancer survivors?	34
Red meat (beef, pork, lamb, and game)	34
Fish/shellfish	35
Guide to Safe Grilling	35
Eggs	36
Poultry	36
What are processed meats?	37
How does eating processed meat impact my health?	37
Tips on how to limit red and processed meat	38
Session 7: Plant-Based Proteins	39
What are plant-based proteins?	39
What are the recommendations for plant-based protein for cancer survivors?	39
Should I avoid soy or soy foods?	40
Tips for adding plant-based protein to your diet	40
What if I am vegan and only eat plant-based foods?	41
Nutrients to consider when following a plant-based diet	41
Session 8: Fats	42
What are the different types of fats?	42
What are the sources of fat in my diet?	43
Types of Fats	43
Will eating a low-fat diet lower the risk of cancer recurrence?	44
Examples of foods that contain a healthy amount of beneficial fats	45
Session 9: Sugars and Sugary Drinks	46
What are natural vs. added sugars? Where are natural and added sugars in my diet?	46
Sugar and cancer: does sugar feed cancer?	46
What are recommendations for added sugars and sugary drinks for cancer survivors?	46
What are artificial sweeteners?	47
I love sweets, how can I cut down on added sugar?	47
Session 10: Sodium	48
What is sodium and where is sodium in my diet?	48
Salt vs. sodium: what's the difference?	48
Sodium and health: how much sodium is a good amount?	49
How do I reduce sodium in my diet?	49
Example menu for reducing sodium	50





Session 11: Drinks	51
Water	51
Coffee	51
Alcohol	51
How does drinking alcohol impact my health?	51
What is the recommendation about alcohol consumption for cancer survivors?	52
What counts as one drink?	52
Session 12: Nutrition Labeling	53
How to read food labels?	53
How do I know if a food is high in fat, saturated fat, sugar or salt?	54
Front-of-pack nutrition labels:	54
Session 13: Supplements	55
What are dietary supplements?	55
Will taking dietary supplements prevent my cancer from coming back?	55
Can I use dietary supplements during cancer treatment?	55
Does dietary supplement use benefit cancer survivors?	56
I am a vegetarian, should I take dietary supplements to meet my daily requirements?	56
Are there supplements to help with symptoms resulting from treatment?	56
Are dietary supplements safe?	57
What is the evidence about taking herbal supplements?	57
Session 14: Fad Diets	58
Do fad diets cure cancer?	58
Do organic foods protect against cancer?	58
How to spot a fad diet?	59
Session 15: Portion Control	60
Use these visual portion size guides to help you control your portion sizes.	60
Portion size pocket guide	61
Food Safety	63
How Do I Talk to My Doctor About My Diet?	64
How to Evaluate Nutrition Information for Cancer Survivors?	65
More Resources	67





Why Is Nutrition Important for Someone Who Has Survived Cancer?

Cancer survivors are at higher risk of chronic health problems throughout their lives. One way to stay as strong and healthy as possible is to maintain a good diet.

Eating well will help you regain your strength, rebuild tissue, and feel better overall. Accumulating evidence supports that eating a diet rich in vegetables, fruits, and whole grains and low in red and processed meats and sugar-sweetened beverages improves survival.

Eating a healthy balanced diet also plays an important role in weight management, which is vital for all cancer survivors as both unwanted weight loss and overweight or obesity are risk factors for poor survival.



How Does Cancer Treatment Impact My Eating Patterns?

Cancer treatment can affect your intake and eating patterns in several ways. Some cancer treatments lead to side effects such as sore mouth, nausea, and vomiting which can impair your ability to consume a healthy balanced diet that meets all your requirements. Not everyone will experience treatment-related side-effects, but this toolkit will help you address them if they are an issue for you. Strategies for managing these issues can be found on page 3.

Because of these side-effects, you may have been advised to change your diet and eat things that are not normally recommended when you are in good health. For instance, you may eat high-fat, high-calorie foods to prevent weight loss, or cool foods like ice cream or milkshakes because sores in your mouth and throat made it hard to eat anything. These measures are designed to ensure that you remain strong and withstand the effects of cancer and its treatment. However, they should not be used to guide your dietary intake post-treatment long-term. Healthy eating guidelines for cancer survivors post-treatment can be found on page 12.



Strategies for Managing Eating Problems During Cancer Treatment

NAUSEA

What food can help if I am feeling nausea during cancer treatment?

If you are feeling nauseous, do not force yourself to eat if you do not feel able. Instead, change your meal hours to eat when you feel most able, without time constraints. Aim to consume 6-8 small meals throughout the day rather than 3 large ones, as avoiding food can lead to hunger, which makes nausea worse. Eat foods that are bland, soft, and easy-to-digest, rather than heavy meals. Avoid high-fat, greasy, spicy, or overly sweet foods and foods with strong odors. Drink flat ginger ale or include ginger in meals as it can reduce nausea.

Is it okay to eat food with my nausea medication?

Yes absolutely, follow the advice above to include foods in your diet that are less likely to make you feel nauseous.

VOMITING

Are there any foods that will help me prevent vomiting? Or anything I should eat or drink to replenish after vomiting

Unfortunately, there are no foods that will prevent you from vomiting. Once the vomiting is controlled, it is important that you try sipping on small amounts of fluid before moving onto other liquids, such as strained soups, or milkshakes, that are easy on your stomach. Try plain foods, such as pretzels or crackers, when you feel able. Eat 5 or 6 small meals every day instead of 3 large meals. Try not to eat your favorite foods during this time, to avoid linking them to being sick.

What should I do to prevent dehydration during cancer treatment?

Sip on small amounts of fluids throughout the day to ensure that you remain hydrated without affecting appetite.



APPETITE CHANGE

I do not like any foods I used to like. Is this normal?

Some treatments for cancer can change how you taste food and therefore change your food preferences. These changes are normally temporary and your taste buds will return to normal with time. In this case, try new foods and eat whatever appeals to you so that you keep meeting your nutritional requirements.

There is a bitter or metallic taste in my mouth. What can I do to cope with it and other taste changes?

Unfortunately, this is a common side effect of some cancer treatments and can be quite off-putting. If there is a metallic taste in your mouth, rinse your mouth regularly and avoid using metallic cutlery or containers. Marinating meats can help mask any metallic taste. Red meat often becomes less appealing, so try poultry, fish, beans, nut butter, or eggs. Try tart foods and drinks. Rinse your mouth with a solution of water and baking soda before and after eating to help the taste.

I am experiencing changes in appetite. What kind of things should I eat to make sure I am getting enough food?

A change in appetite, no longer finding food appealing or not having any interest in eating are common side effects of cancer treatment. While you should not force yourself to eat large amounts, it is important to try to consume small amounts regularly, to avoid weight loss and to help the treatment to work more effectively. Eat whenever you feel hungry, maybe this is the morning time or perhaps late in the evening, have your biggest meal at this time. Eat small frequent meals and try to snack often. Choose foods and snacks that are high in energy and protein. Avoid drinking before or during meals and also high fiber foods as these will both fill you up. Drink milkshakes, juices, and soups if you do not feel like solid food, and fortify them with the milk powder, cream, or protein powder. If possible, try to increase your activity to stimulate your appetite.



MOUTH SORE

I have mouth sores from cancer treatment, are there any foods that will not be painful to eat?

If your mouth is sore it is best to avoid food which is too acidic/sour: spices, aromatic herbs, high salty or smoked food, alcoholic and fizzy beverages, citrus fruits, tomato juice and sauce, pineapple, yogurt and fruit juices. Try sucking on ice cubes to numb the pain or consuming cold foods, like ice cream, can also help.

Eat soft, moist foods with extra sauces, dressings, or gravies. Consume food in small mouthfuls to avoid chewing excessively. Cut food into small pieces or try using a blender or food processor to make food smooth. Avoid bread crust and dry foods such as crackers, breadsticks, popcorn, and crisps as they might scratch the inside of the mouth.

Rinse your mouth 3 to 4 times a day. Mix 1/4 teaspoon baking soda, 1/8 teaspoon salt, and 1 cup warm water for a mouth rinse. Do not use mouthwash that contains alcohol.

MOUTH DRY

My mouth is very dry during treatment, should I be drinking more water?

Having a dry mouth can make it a lot more difficult to enjoy food. To encourage saliva to form try sucking ice cubes, consume popsicles, or chew gum. Eat foods that are easy to swallow and avoid consuming dry foods and raw vegetables. Also avoid sweets and chocolate and foods such as fresh bread that stick to the roof of the mouth as well as wine, beer, or spirits as they can worsen dryness.

It is important to drink small frequent sips of fluid throughout the day. Moisten food with sauce, gravy, or salad dressing and try to choose soft foods, such as scrambled eggs, omelets, soups and vegetable soups, fresh and soft cheese, fish, minced chicken, ice creams, and milk puddings.

Outside of diet, there are a few things you can do to help: avoid tobacco-made products as they could inflame the mouth and throat, keep your lips moist with lip balm and rinse your mouth every 1 to 2 hours with water and baking soda. Do not use mouthwash that contains alcohol. There are some over-the-counter mouthwashes your healthcare team can recommend to you.



DIFFICULTY SWALLOWING

What can I drink to boost my calories if I am having trouble eating solid foods?

It can be easy to lose weight when you have difficulty swallowing. To ensure you meet your requirements and do not experience rapid weight loss, try choosing foods high in energy and protein. Increase the calorie and protein content of your meals by adding milk, cream, and cheese to meals.

To make eating easier, try eating soft foods that are easy to chew and swallow, such as a, scrambled eggs, oatmeal, or other cooked cereals. Cook foods until soft and tender. Cut food into small pieces. Use a blender or food processor to make food smooth. Prepare finely chopped foods or small mouthfuls and always mix well with sauces (white sauce and gravy), semolina, soft cheese, or mayonnaise. Moisten foods with sauces. Eat slowly and chew well every mouthful as much as possible. Thicken fluids to make them easier to swallow. This can be done with corn starch or a prescribed thickener.

It is also important to sit upright and bend your head slightly forward when eating or drinking, and stay upright for at least 30 minutes after eating.

CONSTIPATION

Should I be eating low or high fiber foods during treatment?

To prevent or treat constipation try to gradually increase fluid and fiber intake. High fiber foods include beans, peas, nuts, fruits, vegetables, and whole-grain cereals or bread.

What should I eat to help with my constipation?

In addition to the advice above, certain drinks stimulate a bowel motion. These include prune juice, pineapple juice, and hot drinks. Include these in your diet where possible. Gentle physical activity can also help prevent and treat constipation.



DIARRHEA

Should I be eating low or high fiber foods during treatment?

When you have diarrhea, you should limit high fiber foods such as beans, whole grains, and fruits and vegetables as they may worsen diarrhea.

What should I eat to help with my diarrhea?

Eat foods that are light and easy to digest, such as oatmeal, bananas, and pasta. Drink plenty of liquids, sipping during the course of the day to avoid dehydration. Eat little and often. Avoid rich sauces, fried, spicy, and hot foods. Also avoid caffeine, sweeteners, and citrus.

FATIGUE

I feel tired and do not have the energy to cook. What can I do to improve my energy?

Fatigue is the most common side effect for those diagnosed with cancer and can be caused either by the illness or the treatments. Eating regularly and being as physically active as you are able may help to relieve your fatigue and enhance your mood.

Making sure that you continue to consume a nutritious and balanced diet that meets your requirements will help with your energy levels. Try preparing your meals when you have energy and freeze or refrigerate them. Also, get help with shopping and cooking if you can. It is okay to temporarily rely on ready-to-eat meals, canned, or frozen food. Eat foods that require little preparation and snack frequently. If too tired to cook, consume high energy nourishing drinks like milk, milkshakes, and prescribed supplements.

It's also important to sip fluids throughout the day to avoid dehydration which can make fatigue worse. Try some light exercise if you feel able to help with energy levels and to increase appetite.



Maintaining A Healthy Weight During and After Cancer Treatment

WEIGHT MANAGEMENT GOALS FOR CANCER SURVIVORS

- Achieve and maintain a healthy weight.
- Prevent lean body mass loss by combining aerobic exercise with resistance training.
- For cancer patients who are overweight or obese, limit the consumption of high-calorie foods and beverages, and increase physical activity for weight management.
- For severely obese cancer patients, can consider participate in structured weight-loss programs, use pharmacologic or surgical approaches to achieve a healthy weight.
- Consult health care providers before going on a diet to lose weight.

WHAT IS THE BODY MASS INDEX (BMI)?

The body mass index (BMI) is a measure for adults that uses your height and weight to calculate if you are in a healthy range. The BMI calculation divides weight in kilograms by your height in meters squared.

- $BMI = (\text{weight (kg)})/(\text{height (m}^2))$

If you know your height in inches and weight in pounds, you can calculate your own BMI using the following calculation method:

- $BMI = (\text{weight (lb)}*703)/(\text{height (in}^2))$



WEIGHT CATEGORIES

Weight gain may occur due to cancer itself, cancer treatment, or side effects of some medications. For most adults, an ideal BMI is in the 18.5 to 24.9 (kg/m²) range.

If your BMI (kg/m²) is

- ↗ Below 18.5 - underweight
- ↗ Between 18.5 and 24.9 - healthy weight
- ↗ Between 25 and 29.9 - overweight
- ↗ Between 30 and 39.9 - obese
- ↗ 40 and above - extremely obese

If you want to find out your weight range, you can use the BMI chart below (www.businessinsider.com). Find your height on the left side of the chart, then go across to the weight that is closest to yours. You can find your BMI in one of the color-coded cub.

BMI CHART

WEIGHT lbs	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215
kgs	45.5	47.7	50.0	52.3	54.5	56.8	59.1	61.4	63.6	65.9	68.2	70.5	72.7	75.0	77.3	79.5	81.8	84.1	86.4	88.6	90.9	93.2	95.5	97.7
HEIGHT in/cm	Underweight				Healthy				Overweight				Obese				Extremely obese							
5'0" - 152.4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
5'1" - 154.9	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	36	37	38	39	40
5'2" - 157.4	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	38	39
5'3" - 160.0	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38
5'4" - 162.5	17	18	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37
5'5" - 165.1	16	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35
5'6" - 167.6	16	17	17	18	19	20	21	21	22	23	24	25	25	26	27	28	29	29	30	31	32	33	34	34
5'7" - 170.1	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	33	33
5'8" - 172.7	15	16	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	32	32
5'9" - 175.2	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	31
5'10" - 177.8	14	15	15	16	17	18	18	19	20	20	21	22	23	23	24	25	25	26	27	28	28	29	30	30
5'11" - 180.3	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30
6'0" - 182.8	13	14	14	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29
6'1" - 185.4	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28
6'2" - 187.9	12	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27
6'3" - 190.5	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	26
6'4" - 193.0	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	22	22	23	23	24	25	25	26



UNWANTED WEIGHT LOSS

Weight loss is a common side effect experienced by many cancer patients. This can be caused by cancer itself or by the cancer treatment chosen which could lead to a loss of appetite, difficulty swallowing, dry or sore mouth and all of which will affect dietary intake. Outlined below are some tips to help to stop weight loss and regain weight where appropriate.

- Eat 5-6 small meals throughout the day rather than 3 large meals.
- Eat at pre-stated hours rather than when you are hungry.
- Consume high-calorie, high-protein foods.
- Fortify your meals by adding cheese, butter, milk, or eggs.
- Keep your favorite high-calorie high-protein foods and drinks handy.
- Try some physical activity to help stimulate your appetite.
- Consider oral nutritional supplements if you continue to experience weight loss. Talk to your healthcare provider about this.

UNWANTED WEIGHT GAIN

Weight gain may occur due to cancer itself, cancer treatment, side effects of some medications such as steroids used in treatment, or changes in dietary composition and intake. Treatment of this is important to improve quality of life, improve survival in some cancers, such as breast cancer, and to reduce the risk of developing other non-communicable diseases. Below are some tips to help start the journey, with gradual sustained weight loss being the ultimate goal. Weight loss should not be promoted during active treatment.

- Emphasize healthy eating versus dieting.
- Focus on dietary changes, such as increasing whole grains, fruits, vegetables, and a reduction in fat to achieve an overall decrease in caloric intake.
- Prepare meals with low-fat cooking methods, such as boiling or steaming rather than deep-frying.



- Replace high-fat snack foods and baked goods with lower-fat choices. Choose vegetables and fruits, low-fat yogurt, air-popped or low-fat microwave popcorn, and low-fat crackers.
- Choose lean meats (lean beef or pork trimmed of fat, chicken without skin) and low-fat dairy products (skim or 1% milk, light yogurt, reduced-fat cheese).
- Limit high-calorie, high-fat foods, and desserts.
- Try not to skip meals as this may cause overeating later.
- Limit the size of food portions.
- Encourage an increase in physical activity in those patients for which it is appropriate.



Healthy Eating and Active Living After Cancer Treatment: Nutrition Recommendations for Cancer Survivors

DIETARY PATTERNS

- Consume a healthy diet rich in fruits, vegetables, whole grains, and low in red and processed meat.
- Cancer survivors who are on a vegan diet are recommended to consume nuts, seeds, and legumes to meet the protein needs, and may need to take supplement vitamin B12 or vitamin D if there are deficiencies.

FRUITS AND VEGETABLES

- Consume at least 5 servings of fruits and vegetables per day.
- Eat a variety of fruits and vegetables with different colors.
- Choose whole fruits more often than relying on drinking fruit juices and do not rely on fruit juices as intake of fruits.

WHOLE GRAINS

- Consume at least 1/2 of daily grains intake as whole grains.
- Choose whole grains and whole-grain products as a good source of fiber. Do not rely on fiber supplements.



NUTS, SEEDS, AND LEGUMES

- Cancer survivors are recommended to consume nuts, seeds, and legumes as a source of plant-based protein and healthy fatty acids.
- Cancer survivors can consume soy as an alternative source of protein.

RED MEATS AND PROCESSED MEATS

- Limit red meat consumption to be less than 18 ounces a week.
- Cancer survivors are recommended not to consume processed meats.

FISH AND SEAFOOD

- It's recommended to consume fish as a good source of protein for a healthy diet.

DAIRY

- Consume low-fat or non-fat dairy products as a good source of protein.

SATURATED FAT

- Consume less saturated fat (<10% of energy).
- Consume foods rich in omega-3 fatty acids such as nuts/seeds and fatty fish.

ADDED SUGARS

- Limit consumption of foods high in added sugars (<10% of energy).
- Limit intake of sugar-sweetened beverages such as soft drinks, sports drinks, and fruit-flavored drinks.



SODIUM

- Limit consumption of salty foods and processed foods with salt.

ALCOHOL

- Avoid alcohol.
- If you choose to consume alcohol, limit alcohol consumption to 1 drink a day.
- Discuss with health care providers.
- If mucositis is present, avoid alcohol as it irritates.

PHYSICAL ACTIVITY

- Be as active as possible.
- Aim to exercise at least 150 minutes a day with 30 minutes per day, and at least 2 days a week of strength training.
- Aim to have a regular exercise for 60 minutes per day as cancer survivors become more fit with regular physical activity.
- Discuss with healthcare providers before engaging in desired strength training activities.

SUPPLEMENT USE

- Do not replace dietary intake with supplement use. The dietary supplement is not recommended unless indicated for specific conditions.
- If supplements are indicated, take it with the review or advice of the healthcare team.



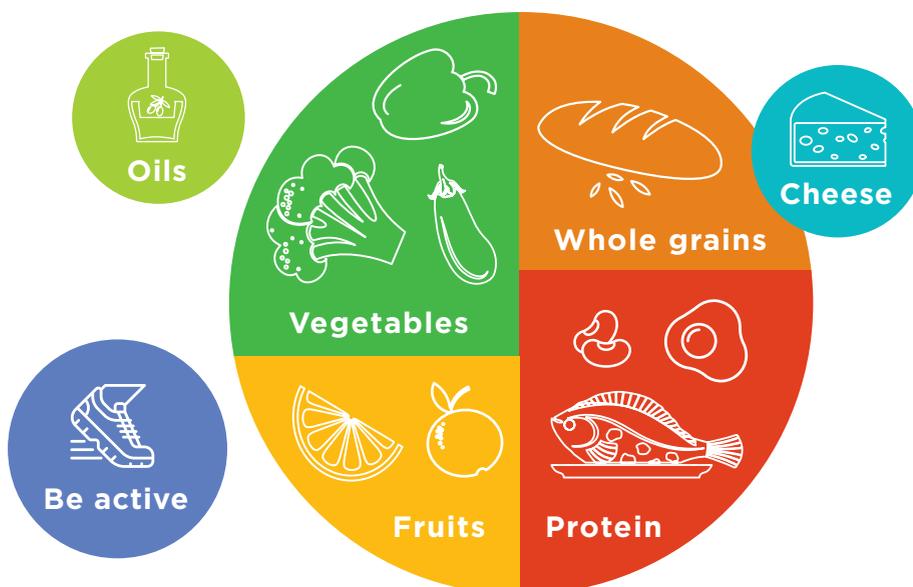
Frequently Asked Nutrition Questions by Cancer Survivors

Session 1 | Plant-Based Diet

WHAT IS A HEALTHY PLANT-BASED DIET?

There are many types of plant-based diets, and they all have an emphasis on cancer-protective, minimally-processed plant-based foods, including fruits, vegetables, whole grains, legumes, nuts, and seeds. A plant-based diet does not necessarily imply the complete exclusion of animal products, but rather, it means that the majority of the diet is derived from plant-based foods. The sources of plant foods are also important. For example, white pasta and bread, French fries, and pastries are plant-based foods, but they are highly processed with added sugar and fat. Thus, they won't provide the same health benefits as the whole and minimally-processed foods and can lead to overeating. A practical and easy way to follow the plant-based plate guidelines includes: cover 2/3 or more of your plate with fruits, vegetables, whole grains as indicated, and 1/3 with protein foods; prefer fish, eggs, poultry, beans, seeds, and nuts and avoid processed and red meat; milk and dairy products are also an important part of the plant-based diet; prefer using healthy oils such as olive oil for salads and cooking.

WHAT DOES A HEALTHY PLANT-BASED DIET LOOK LIKE?





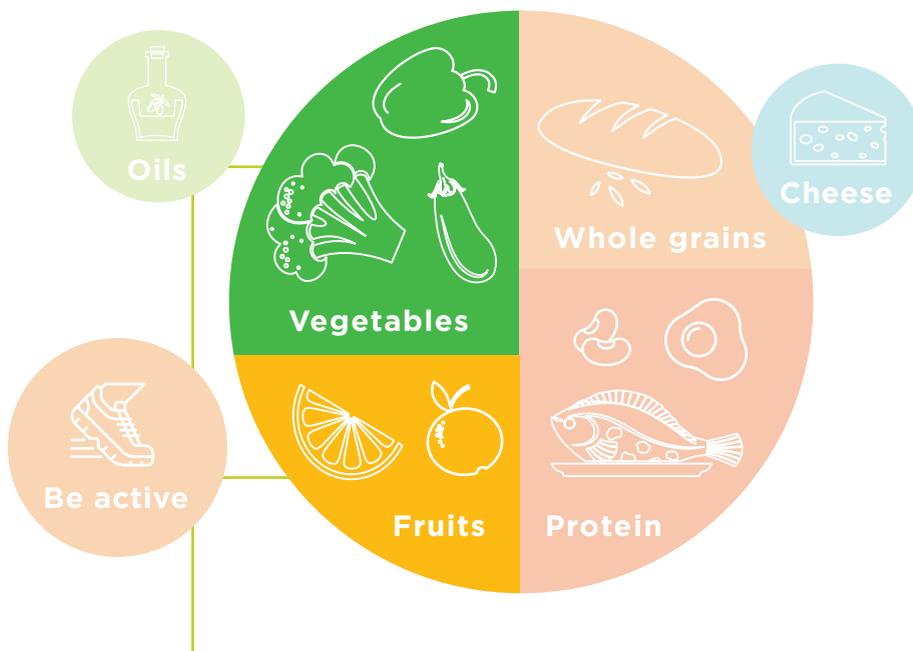
WHY ARE CANCER SURVIVORS RECOMMENDED TO EAT A HEALTHY PLANT-BASED DIET?

The nutrients found in healthful plant-based foods have been shown to prevent and protect against a range of cancers (including mouth, pharynx, larynx, esophagus, and lung). Almost all healthful plant-based foods contain minerals and vitamins (especially A, C, E) that enhance our immune system and regulate normal bodily functions. They also contain phytochemicals (chemicals from plants) and antioxidants, substances that aid to protect against cell damage that is associated with aging and increased cancer risk. Additionally, foods rich in fiber (whole-grain bread and pasta, oats, vegetables, and fruits) make you feel full for longer and help with weight loss and maintenance. On the other hand, there is convincing evidence showing that red and processed meat increases the risk of certain cancers.

Session 2 Fruits & Vegetables

WHAT ARE THE RECOMMENDED AMOUNTS OF FRUITS AND VEGETABLES THAT ARE BEST FOR MY HEALTH? HOW MANY SERVINGS SHOULD I EAT PER DAY?

US dietary guidelines recommend eating a variety of colorful fruits and vegetables every day as part of a healthy diet. Aim to have at least 5 servings of fruits and vegetables per day or at least 2-3 servings of vegetables and 1.5-2 servings of fruits.



WHAT EXACTLY IS 1 SERVING?

1 serving of fruits = 80 grams of fruits or 30 grams of dried fruits (which is equal to one heaping tablespoon of dried fruits, e.g., raisins, cherries or dates). Also take a look at the chart on page 20 and our menu on page 21 for example of 1 serving of fruits and vegetables.



WHAT ARE THE RECOMMENDED KINDS OF FRUITS AND VEGETABLES THAT ARE BEST FOR MY HEALTH?

Starchy vs. non-starchy

Starchy vegetables include potatoes, corn, green peas, lima beans, water chestnuts, and other roots and tubers. Compared to other vegetables, these are higher in calories but lower in nutrients such as vitamin C, beta-carotene, lycopene, and folate, which are beneficial for health. While starchy vegetables such as sweet potatoes are still nutritious choices that can offer nutrients such as potassium and fiber, the World Cancer Research Fund (WCRF)/American Institute for Cancer Research (AICR) recommends at least 5 servings per day of fruits and non-starchy vegetables.

Forms

Vegetables and fruits can be found in many forms at the grocery store: for example, whole, canned or frozen. Whole fruits and vegetables are the best choices. Canned or frozen options can be just as good, but be sure to watch for added sugars and sodium.

Color

Note that, no single fruit or vegetable consists of all the nutrients required for optimal health. Therefore, aim to have a rainbow of fruits and vegetables in your diet. Look at the chart on page 20 to help you include some dark leafy greens, and brightly colored red, yellow, and orange fruits and vegetables, in your diet.

The color in vegetables and fruits indicate that they contain beneficial compounds. For example, the deep color in vegetables such as deep green broccoli and spinach, orange carrots and sweet potatoes, and red tomatoes reflects the amounts of phytochemicals that they contain. The red color in cooked tomatoes and grapefruit are due to the presence of lycopene, which has been associated with reduced cancer risk. This does not mean that white grapefruits do not provide healthy compounds. The white color in onions, garlic, cauliflower, and white mushrooms is a sign of cancer-protective compounds. Aim to have a rainbow of fruits and veggies in your diet.

The rainbow of fruits and vegetables

The chart below illustrates a variety of different colors of fruits and vegetables and examples of what counts as one serving.



RED

- 1 small apple
- 7 large berries
- 1 large tomato
- 1 medium grapefruit
- 1 1/2 cup of pomegranate seeds
- 1 cup of watermelon

GREEN

- 2 spears of asparagus
- 2 celery stalks
- 6 small broccoli florets
- 2 small kiwis

YELLOW/GREEN

- 2 medium carrots
- 1 large orange
- 1 large peach
- 1 cup of mashed pumpkin
- 1 large pepper
- 1 cup of chopped pineapple
- 1 cup of kernels

PURPLE/BLUE

- 12 grapes
- 2 large plums
- 1 1/2 onions
- 1 cup blueberries
- 2 beets

WHITE/BROWN

- 1/4 head of cauliflower
- 1 large baked potato
- 4 large mushrooms
- 1 cup slices parsnip
- 1 medium banana



ADDING MORE SERVINGS OF FRUITS OR VEGETABLES

	TAKE A...	AND ADD...	NUMBER OF 5 SERVINGS A DAY
BREAKFAST	A bowl of whole-grain cereals/oats	1 banana + 6 strawberries or 1/2 cup berries	2
	Omelets	1 large tomato + 1/2 cup cooked spinach + asparagus	2
	2 slices of whole-grain bread with cottage cheese	1/2 medium cucumber + 2 leaves of green leaves	2
LUNCH	Grilled chicken	Salad of 1/2 small avocado + 1 tomato	2
	Beans with brown rice in a wrap	1/2 sliced tomato + 1 cup parsley + onion	2
	Tuna sandwich with whole-grain bread	1/2 tomato + 2 lettuce + small bowl of garden salad	2
	Chicken noodle soup	1 10-inch celery stalks + 1 carrot, sliced + 1/2 onion	2.5
SNACK	Yogurt or cottage cheese	1/2 cup of fresh fruit (pineapple) + 1 tsp honey	2
	Hummus	1 carrot + 1 10-inch celery + 2-3 broccoli florets	2
	Peanut butter on 1 whole-grain slice of bread	1 banana	1
DINNER	1 fillet of salmon + rice	Small bowl side salad with colorful peppers + balsamic vinegar or low-fat sauce	2
	Whole grain pasta with low-fat cheese	1 cup of tomato sauce + 4 large mushrooms	2
	Grilled chicken burger in whole-grain bagel	2 x lettuce + medium cucumber + 2-3 slices of tomato	2.5





IS JUICING BENEFICIAL FOR MY HEALTH?

Juice products that are 100% vegetable or fruit juices and pasteurized to remove harmful germs can be considered equal to 1 1/2 cup of fruits or vegetables. For people who have chewing or swallowing problems, juicing is a practical way to help your body absorb important nutrients from vegetables and fruits in your diet.

However, juicing removes the skin of fruits and vegetables, and therefore has less fiber than whole fruits. Fiber is an important nutrient for your health (see Session 3 on whole grains & fiber for details). Also, the high consumption of fruit juices can add extra calories to your diet and may lead to weight gain. For example, one serving of whole fruits, such as 1 orange contains 12g sugars whereas one cup of juice (made up of more than 1 serving of whole fruit) contains more sugars, e.g. 1 cup orange juice contains 22g sugars. Thus, moderation is key. The World Cancer Research Fund (WCRF)/American Institute for Cancer Research (AICR) suggests that cancer survivors have no more than 3/4 to 1 cup of fruit juice a day. Note that, a “juice cocktail” or “juice beverage” means it is not 100% juice. Juice boxes that are available on the market may come with a significant amount of added sugars (read Session 12 *Nutrition Labeling* to help you choose carefully and limit your added sugar intake). Limit consumption of juice beverages with added sugars. Choose whole fruits as your best choice for fruits.

CAN I GET THE EQUIVALENT BENEFITS OF FRUITS AND VEGETABLES THROUGH DIETARY SUPPLEMENTS?

There is no consistent convincing evidence to suggest that dietary supplements provide the equivalent benefits of fruits and vegetables. The best and healthiest sources of vitamins and minerals are foods and not supplements. Nutrient-rich whole foods, mostly plant-based foods contain cancer-fighting nutrients that interact synergistically to provide health benefits to your body.

There are some instances when cancer survivors are recommended to take dietary supplements to treat nutritional deficiencies or inadequacies. If you require these they will be prescribed/recommended by your physician or dietitian. Cancer survivors are therefore strongly recommended to consult a doctor before taking any vitamins, minerals, or other dietary supplements. Some dietary supplements for instance may interact with cancer treatment, and mega doses of dietary supplements can be harmful.



Session 3 | Fiber & Whole Grains

WHAT ARE THE BENEFITS OF EATING A DIET RICH IN FIBER AND WHOLE GRAINS?

High-fiber foods such as whole grains, beans, fruits, and vegetables, are associated with a lower risk of certain cancers. In particular, strong evidence suggests that such foods decrease the risk of colorectal cancer.

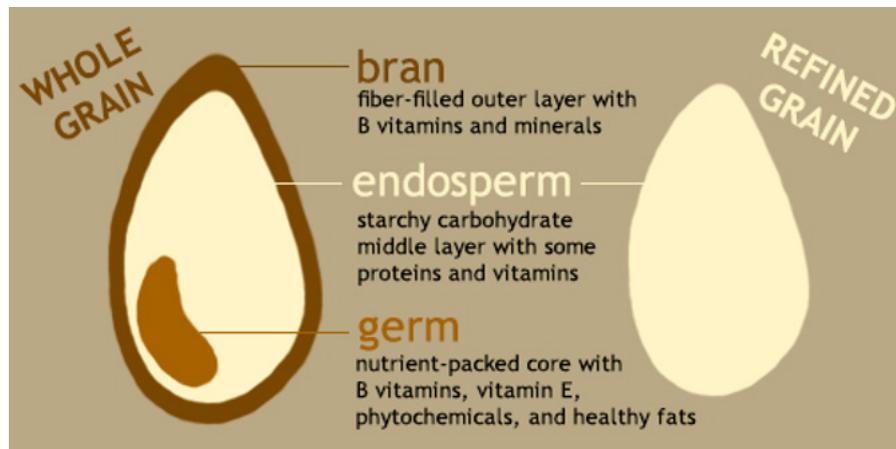
Whole grains are a source of dietary fiber. Whole grains are also a rich source of vitamins and minerals that have potential anti-cancer properties. A diet rich in fiber and whole grains can help you maintain a healthy weight, which is vital to the long-term health outcomes of cancer survivors.

WHERE IS FIBER IN MY DIET?

Major sources of dietary fiber include whole grains; legumes such as dried beans, lentils, and peas; vegetables such as artichokes, collards, and sweet potatoes; fruits such as apples (with peels), blackberries, raspberries, figs and prunes; nuts such as pistachios and almonds; and seeds such as sunflower and chia.

WHAT ARE WHOLE GRAINS AND WHOLE-GRAIN FOODS?

A grain is considered to be a whole grain if all three original parts of the grain kernel – bran, germ, and endosperm – are still present. When the bran and the germ are removed during processing called refining, about a quarter of a grain's protein is lost along with several key nutrients and fiber. On the contrary, whole grains retain all of the nutrients and fiber that kernels contain. Please see the graph below from the Nutrition Source at the Harvard T.H. Chan School of Public Health as an illustration of whole grain versus refined grain.



(<https://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/whole-grains/>)

Whole grains can be served in a grain form (e.g., barley, brown rice, buckwheat, bulgur, oatmeal, quinoa, etc.) or in the flour form of these grains (whole-wheat bread, pasta, or crackers). They can also be added as ingredients in the forms of grain, flour, or a mix of these two to make grain-containing products. Examples of grain-containing products are granola made of rolled oats, nuts and seeds, and puffed white rice, bread made with a mixture of white flour and whole-wheat flour, and oatmeal cookies made of white flour and oats.

It is important to note that not all grain-containing products can be called whole-grain foods. According to the US dietary guidelines, a whole-grain product must contain at least half of its grain components as whole grains. For example, if granola contains only rolled oats and nuts and seeds, it is a whole-grain product because all the grain components are whole grains (e.g., rolled oats). However, if refined grains (e.g., puffed white rice) are added to the granola, the product may not be considered as a whole-grain food, depending on the amount of rolled oats and puffed white rice.

HOW DO I FIND WHOLE GRAINS AND WHOLE-GRAIN FOODS?

You may easily identify whole grain foods when they are served in the grain forms or flour form of these whole grains. Popular whole grain foods consumed in the US include brown rice, oats, popcorn, quinoa, buckwheat, bulgur, whole barley. Below are some examples of ingredients that are and are not whole grains.



WHOLE GRAINS

- Brown, Red, Or Black Rice**
- Bulgur**
- Barley**
- Graham Flour**
- Oats**
- Wheat Berries**
- Oatmeal**
- Quinoa**
- Rye Berries**
- Stone-ground Whole Teff**

NOT WHOLE GRAINS

- Bran**
- White Cornmeal**
- Durum Wheat**
- Enriched Flour**
- Wheat Flour**
- Multi-grain**
- Organic Flour**
- Pearled Barley (bran is removed)**
- Semolina**
- Unbleached Flour**
- Wheat Germ**



It is a little tricky to determine whether a grain-containing food is a whole-grain food. Several foods appear to be whole-grain foods but they may not be. Note that the use of the terms “wheat,” “whole grain,” “made with whole grain,” “multi-grain,” and “stone-ground does not necessarily mean that the product is a whole-grain food.

A practical way to identify whole-grain foods is to check the ingredient list, which is usually on the back of the package. The first ingredient - which is the one present in the highest amount - needs to be a whole grain in order for a grain-containing product to be considered as a whole-grain food.

IDENTIFYING WHOLE-GRAIN FOODS

The front of package label could have misleading wording such as “made with whole grain”. Try to compare the front of package label with the ingredient list to see whether you can tell whether the product is a whole-grain product.



Ingredients: Water, enriched flour (wheat flour, niacin, reduced iron, vitamin B1 [thiamin mononitrate], vitamin B2 [riboflavin], folic acid), whole wheat flour, vegetable oil (soybean, palm and/or canola oil), wheat bran, sugar, eggs, contains 2% or less of leavening (baking soda, sodium aluminum phosphate, monocalcium phosphate), salt, malt flavor, whey, soy lecithin. Vitamins and Minerals: Calcium carbonate, vitamin A palmitate, reduced iron, niacinamide, vitamin B6 (pyridoxine hydrochloride), vitamin B1 (thiamin hydrochloride), vitamin B2 (riboflavin), folic acid, vitamin B12.

➤ **As you can tell from the ingredient list, this product is indeed made with whole grain (whole wheat flour), but the primary grain ingredient is enriched wheat flour, which is refined-grain flour.**



Ingredients: Enriched Wheat Flour (Flour, Niacin, Reduced Iron, Thiamine Mononitrate, Riboflavin, Folic Acid), Water, Whole Wheat Flour, Sugar, Yeast, Wheat Berries, Sunflower Seeds, Wheat Gluten, Oat Fiber, Soybean Oil, Contains 2% or Less of: Oats, Salt, Pearled Barley, Rye, Triticale, Corn Grit, Millet, Flaxseed, Calcium Propionate, and Sorbic Acid to Extend Freshness, Monoglycerides, Sodium Stearoyl Lactylate, Flaxseed Meal, Buckwheat Flour, Millet Flour, Brown Rice Meal, Amaranth Flour, Soy Lecithin, Whey* (Milk), Citric Acid, Malted Barley Flour.

➤ **While the front label of this bread boasts that it is “12 Grain”, we can see from the ingredient list that the primary ingredient is enriched wheat flour, and most of the other grains each comprise 2% or less of the product.**



Ingredients: Whole Wheat Flour, Water, Wheat Gluten, Sugar, Yeast, Brown Sugar, Contains 2% or Less of Each of the Following: Flax Seed, Whole Rye Flour, Salt, Rolled Oats, Soybean Oil, Barley Flakes, Triticale Flour, Cultured Wheat Flour, Sunflower Seed, Vinegar, Monoglycerides, Enzymes, Ascorbic Acid, Wheat Starch, Whole Amaranth, Hulled Whole Millet, Whole Khorasan Wheat Flour, Whole Brown Rice Flour, Whole Buckwheat Flour, Whole Milled Corn, Whole Spelt Flour, Monocalcium Phosphate, Soy Lecithin, Calcium Sulfate, Topped with Whole Amaranth Seed, Flaxseed, and Wheat Bran.

➤ **The first ingredient is whole wheat flour, meaning that the product is mostly if not all whole grain. Whenever you see “100% Whole Grain” on the front of the label, you can know that all of the major grain ingredients will be whole.**



The examples above demonstrate how ingredient lists can be used to tell whether a grain-containing product is a whole-grain product. Be aware that whole-grain products can also contain large amounts of added sugar, sodium, and saturated fats. For this reason, we want to check the Nutrition Facts Panel as well (<https://www.fda.gov/food/food-labeling-nutrition/nutrition-facts-label-images-download>). Please see the red circles that show the amount of saturated fat, sodium, added sugars on a Nutrition Facts Panel. When shopping packaged foods, try to choose whole-grain products with little or no saturated fat or added sugars and look for the low-sodium option. More information about how to read a food label can be found on page 53.

Nutrition Facts	
8 servings per container	
Serving size	2/3 cup (55g)
Amount per serving	
Calories	230
% Daily Value*	
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 240mg	6%

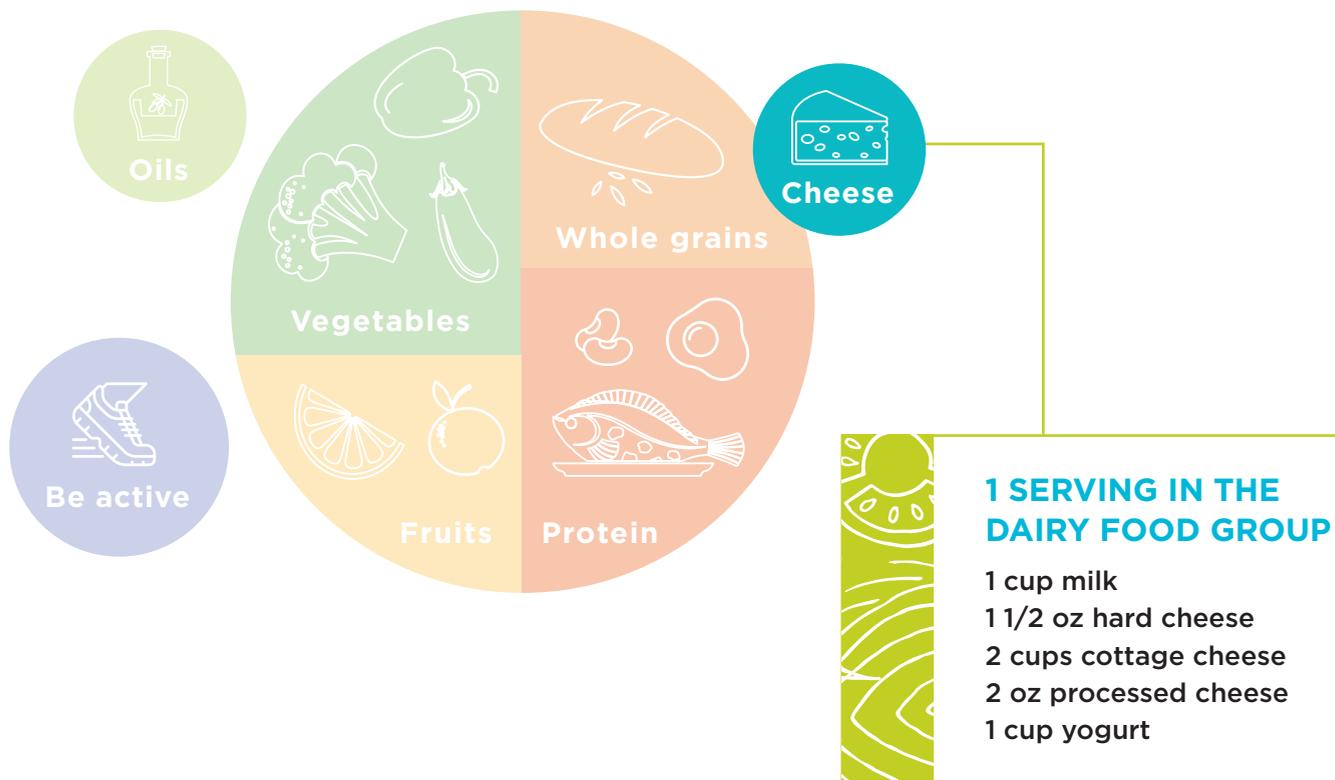
* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Session 4 Dairy

WHY ARE DAIRY FOODS IMPORTANT FOR CANCER SURVIVORS?

Dairy foods are rich sources of nutrients and have a number of health benefits. For example, calcium is essential to keep bones and teeth healthy, helps blood clotting formation to stop bleeding, and regulates the functioning of nerves, muscles, and heart. Calcium health effects are enhanced by Vitamin D found in fortified dairy as well. In particular, Vitamin D regulates calcium and phosphorous levels in the blood. Lastly, potassium is important to maintain normal blood pressure.

WHAT COUNTS AS 1 SERVING OF DAIRY?





ADDING MORE SERVINGS OF FRUITS OR VEGETABLES

DAIRY FOODS	AMOUNT THAT COUNTS AS A SERVING IN THE DAIRY GROUP	COMMON PORTIONS AND CUP EQUIVALENTS
MILK	1 cup milk 1 half-pint container milk or 1/2 cup evaporated milk	
YOGURT	1 regular container (8 fluid oz) 1 cup yogurt	1 small container (6 oz) = 3/4 cup 1 snack size container (4 oz) = 1/2 cup
CHEESE	1 1/2 oz hard cheese (cheddar, mozzarella, Swiss, Parmesan) 1/3 cup shredded cheese 2 oz processed cheese (American) 2 cups cottage cheese	1 slice of hard cheese = 1/2 cup milk 1 slice of processed cheese = 1/3 cup milk 1/2 cup cottage cheese = 1/4 cup milk

WHAT ARE THE RECOMMENDATIONS FOR DAIRY FOODS FOR CANCER SURVIVORS?

US dietary guidelines suggest aiming for 2-3 servings of dairy per day as part of an overall healthy eating pattern. One serving equals 1 cup milk or yogurt or 1 1/2 ounces natural cheese (equal to the size of a pointer finger). See the chart on page 30 for more examples of dairy portion sizes. The evidence suggesting that higher consumption of dairy products or diets high in calcium increase or decrease the risk of cancer (especially prostate cancer) is limited. To lower your daily calories, reach for low-fat dairy options like low-fat milk and reduced-fat cheese or yogurt.





IF I AM LACTOSE INTOLERANT OR CHOOSE NOT TO CONSUME DAIRY PRODUCTS, HOW CAN I MEET MY CALCIUM NEEDS?

You can obtain optimum calcium intake by eating 2-3 servings of the following non-dairy foods per day, which are considered as a calcium equivalent to 1 serving of dairy product (300mg calcium):

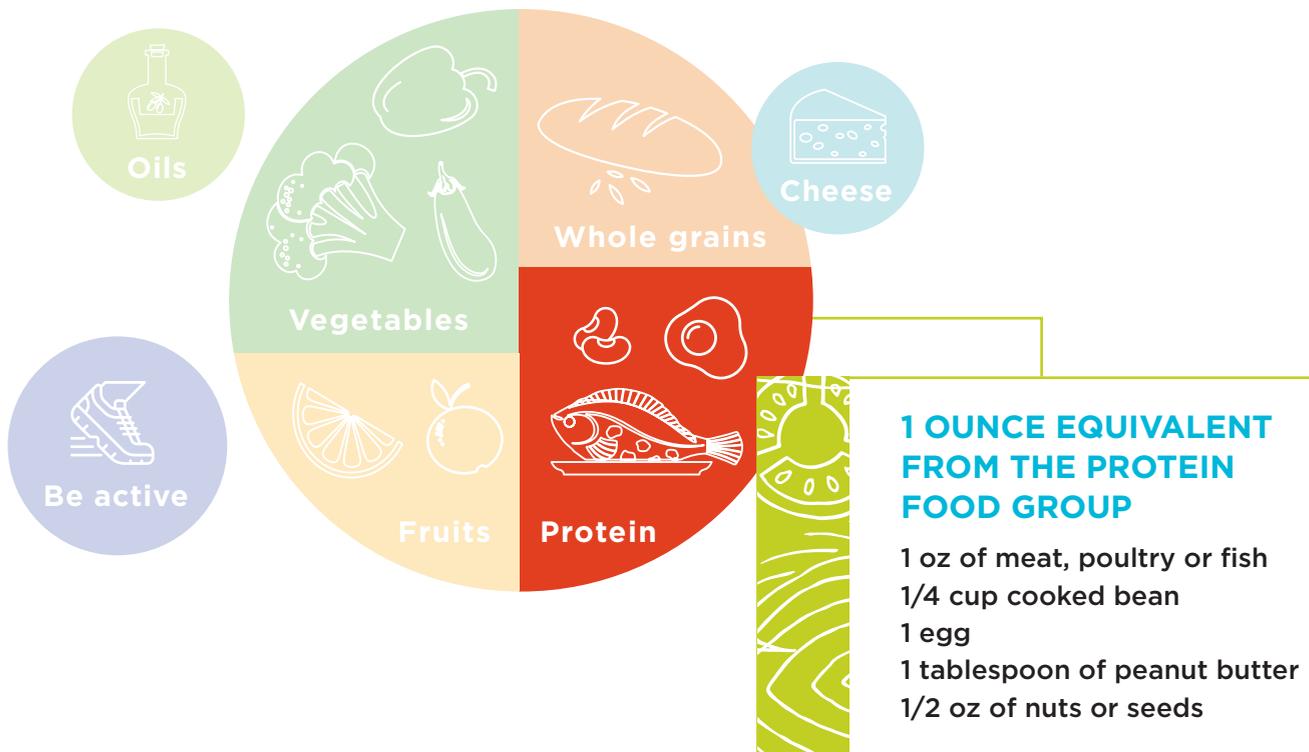
- 1 cup of calcium-fortified orange juice.
- 1 cup of calcium-fortified soy milk or soy yogurt.
- 1 serving of calcium-fortified bread or waffles.
- The calcium content of tofu varies. Therefore, check the nutritional label for calcium content. One serving of tofu should be equal to ~300 mg calcium to be considered as a calcium equivalent to 1 serving of the dairy product.
- Dark green leafy vegetables contain calcium. However, these dietary sources are poorly absorbed from your body and therefore you need to consume big amounts for 1 dairy serving. For example, 1/2 cup of Chinese cabbage, 1 1/2 cups kale or turnip peas, more than 2 cups of broccoli, and 8 cups of cooked spinach is considered as a calcium equivalent to a serving of dairy products.

Session 5 Protein

WHY IS PROTEIN IMPORTANT?

Plant and animal-based proteins are both important to maintain normal bodily functions, such as body weight and strength, and is required for normal growth and repair. In particular, protein has a number of functions in the body:

- Growth and preservation of muscles, tissues, red blood cells, enzymes, and hormones.
- Carrier of many body compounds and medications.
- Maintenance of fluid balance.
- Fighting against infections and enhancement of the immune system.
- Better tolerance of cancer treatment.





WHAT IS THE RECOMMENDED DAILY AMOUNT OF PROTEIN FOODS (PLANT AND ANIMAL SOURCES)?

GENDER	AGE (YEARS)	DAILY RECOMMENDATIONS OF PROTEIN FOODS (OZ EQUIVALENT)
WOMEN	19-30	5 1/2
	31-50+	5
MEN	19-30	6 1/2
	31-50	6
	51+	5 1/2

*Based on Dietary Guidelines for Americans, these amounts are appropriate for individuals who get less than 30 minutes per day of moderate physical activity, beyond normal daily activities. Those who are more physically active may be able to consume more while staying within calorie needs.

WHAT ARE THE PROTEIN FOODS AND WHAT COUNTS AS 1 OUNCE EQUIVALENT IN THE PROTEIN FOODS?

Look at the table on page 33 for more specific amounts that count as 1 ounce equivalent in the protein food group towards your daily recommended intake. Additional information about the portion size of protein foods can be found in Session 15 on page 60.



PROTEIN FOODS

AMOUNT THAT COUNTS AS 1 OUNCE EQUIVALENT IN THE PROTEIN FOODS GROUP

COMMON PORTIONS AND OUNCE EQUIVALENTS

MEATS

1 oz cooked lean beef
1 oz cooked lean pork or ham

1 small steak (eye of round, filet) = 3 1/2 to 4 oz
1 small lean hamburger = 2-3 oz

POULTRY

1 oz cooked chicken or turkey, without skin
1 sandwich slice of turkey (4 1/2" x 2 1/2" x 1/8")

1 small chicken breast half = 3 oz
1/2 Cornish game hen = 4 oz

SEAFOOD

1 oz cooked fish or shellfish

1 can of tuna, drained = 3-4 oz
1 salmon steak = 4-6 oz
1 small trout = 3 oz

EGGS

1 egg

3 egg whites = 2 oz
3 egg yolks = 1 oz

NUTS AND SEEDS

1/2 oz of nuts (12 almonds, 24 pistachios, 7 walnut halves)
1/2 oz of seeds (pumpkin, sunflower, or squash seeds, hulled, roasted)
1 tbsp. of peanut butter/almond butter

1 ounce of nuts or seeds = 2 oz

BEANS AND PEAS

1/4 cup of cooked beans (black, kidney, pinto, or white beans), baked beans, refried beans, roasted soybeans
1/4 cup of cooked peas (chickpeas, cowpeas, lentils, or split peas),
1/4 cup (= 2 oz) of tofu
1 oz tempeh, cooked
1 falafel patty (2 1/4", 4 oz)
2 tbsp. hummus

1 cup split pea soup = 2 oz
1 cup lentil soup = 2 oz
1 cup bean soup = 2 oz
1 soy or bean burger patty = 2 oz





Session 6 | Animal-Based Proteins

WHAT ARE THE RECOMMENDATIONS OF ANIMAL-BASED PROTEIN SOURCES FOR CANCER SURVIVORS?

Red meat (beef, pork, lamb, and game)

Limit cooked red meat to 18 oz or less per week. Research has shown that diets high in red meat (>18 oz/week) are associated with an increased risk of colorectal cancer.

TIPS

- Try to have smaller portions of burgers and steaks and meat-free days throughout the week. Here are some examples of 1 portion size of red meat. Look at the menu below for more tips.



AVERAGE PORTION SIZES

Medium steak / 5 oz red meat

Pork chop / 2.6 oz red meat

Spaghetti sauce with red meat / 3 oz red meat

Serving of roast lamb / 3 oz red meat

**Deck of cards / 1 portion*

- Slow cooking at low temperatures such as braising is the healthiest cooking method. There is some evidence to support that barbecuing, grilling or pan-frying may produce certain types of carcinogens. Read more here for the American Institute for Cancer Research (AICR) guide to safe grilling.



GUIDE TO SAFE GRILLING

Marinate

Studies have suggested that marinating your meat before grilling can decrease the formation of HCAs. Scientists theorize that the antioxidants in these marinades block HCAs from forming.

Pre Cook

If you are grilling larger cuts, you can reduce the time your meat is exposed to the flames by partially cooking it in a microwave, oven or stove first. Immediately place the partially cooked meat on the preheated grill. This helps keep your meat safe from bacteria and other food pathogens that can cause illness.

Lean Cuts

Trimming the fat off your meat can reduce flare-ups and charring. Cook your meat in the center of the grill and make sure to flip frequently.

Mix It Up

Cutting meat into small portions and mixing with veggies helps shorten cooking time.

Go Green

Grilling vegetables and fruits produces no HCAs and plant-based foods are actually associated with lower cancer risk.



Fish/shellfish

The Dietary Guidelines for Americans recommend at least 8 oz of fish and seafood per week based on a 2,000 calorie diet. Please see the table on page 33 for examples of fish serving size. Have at least one of your fish servings is fatty fish such as salmon, sardines, and canned tuna. Any type of fish is high in protein, B vitamins, and minerals such as magnesium and selenium and low in saturated fat. Fatty fish contains heart-healthy omega 3 fats that have been consistently shown to reduce cardiovascular disease events.

TIPS

- Note that, almost all fish and shellfish have a small number of contaminants due to pesticide and pollution content in waters. According to the United States Environmental Protection Agency eating low-level contaminated fish is not a health concern. Nevertheless, breast-feeding women, women who are or who could become pregnant and young children should be aware of the mercury content in large fishes that live the longest (e.g. sharks, swordfish). These groups of people should aim to have most of their fish servings from fish lower in mercury





for important developmental and normal growth (e.g. haddock and catfish, king mackerel, and tilefish).

- Try to obtain your omega-3 fatty acids through food which is the best source instead of supplements. For people who don't eat fatty fish, consult your doctor to consider fish oil supplementation.

Eggs

Based on the Dietary Guidelines for Americans, moderate egg consumption can be a part of an overall healthy pattern. Eggs are low in saturated fat and rich in protein. High egg consumption is not associated with an increased risk of cancer.

TIPS

- For calorie-restricted diets, boil or poach the egg instead of frying to reduce your saturated fat intake. If you choose to fry, add 1 tablespoon of vegetable-based oil (such as olive oil) to the pan.
- Ensure that your plate contains other healthy foods, like fruits and vegetables along with your egg so you have a complete and nutritious meal.
- Brown-shell eggs are not more nutritious than white. The color of the eggshell is determined by the breed of hen that lays an egg. The nutritional value of egg (white or brown) is linked to the diet and health status of the hen that laid it.

Poultry

The Dietary Guidelines for Americans recommend consumption of poultry and lean meats as part of a healthy diet. Limiting red and processed meat by substituting with unprocessed poultry with the skin removed is a healthy and practical way to meet recommendations.

TIPS

- If desired, cook the meat with the skin on and remove it before eating.
- See our menu on page 38 for more tips.



WHAT ARE PROCESSED MEATS?

Processed meat refers to meat that has undergone through preserved processes such as salting, curing, fermentation, smoking, or other processes to enhance flavor. Examples of processed meat are the following:

Sausage, pepperoni, bacon, pastrami, ham, bologna, hot dogs (frankfurters), corned beef, Salami, deli/luncheon meats, meat-based sauces, canned meat

HOW DOES EATING PROCESSED MEAT IMPACT ME?

The World Health Organization (WHO) and the International Agency for Research on Cancer (IARC) classify processed meat as a type 1 carcinogen as there is strong evidence linking processed meat and risk of colorectal cancer and stomach cancer. Also, higher consumption of processed meat is associated with increased death and cardiovascular disease rates. It is recommended to avoid or reduce the amount of processed meat in your diet and strongly suggested to substitute processed meat with plant-based sources. Follow the tips below to help you to do this.



TIPS ON HOW TO LIMIT RED AND PROCESSED MEAT

FOODS	ADD A HEALTHY ALTERNATIVE	ADD A HEALTHY ALTERNATIVE	SWAP IT OUT
BREAKFAST			
American breakfast	2 sausages (2 oz) 3 pieces of bacon (2.6 oz)	1 sausage 1 piece of bacon Mushrooms	Oats or whole-grain cereals + yogurt or milk + pieces of fruits and seeds
LUNCH			
Ham sandwich	2 slices of ham (2 oz)	1 slice of ham 1 slice of cheese or 1 egg	Tuna, roasted chicken, or smoked salmon sandwich Peanut butter with banana and cinnamon
Caesar salad	2 pieces of bacon (1.7 oz)	1 slice of bacon More vegetables	Salad with roasted chicken and grated cheese Salad with beans and quinoa
Pepperoni pizza	2 slices (2 oz)	1 piece of pizza with bowl of salad	Pizza with vegetable and cheese or roasted chicken
Soups or stews	2 oz of beef or lamb	1 oz of red meat + vegetables + rice or sweet potato	Chicken soup with vegetables and whole-grain noodles
DINNER			
Spaghetti bolognaise	3.5 oz minced beef	1.5 oz minced beef with mushrooms + peppers	Tomato sauce with onions, pepper, mushrooms + cheese
Beef steak	6 oz steak	3 oz steak with salad and whole-grain rice	Roasted chicken or baked salmon





Session 7 | Plant-Based Proteins

WHAT ARE PLANT-BASED PROTEINS?

Plant-based proteins are those that come from non-animal sources such as:

- Soy foods, such as soy nuts, soy milk, tempeh, and tofu
- Seitan (made of gluten)
- Vegetarian meat substitutes (watch for products that are high in sodium)
- Legumes, beans, and lentils
- Nuts, nut butter, seeds, and whole grains

Different foods have different amounts of amino acids (the building blocks of proteins). Animal-based protein foods (e.g., meat, fish, eggs, and dairy products), soy, quinoa, and amaranth contain the full range of essential amino acids required by the body. Vegans and vegetarians can obtain all the amino acids their body needs by eating a variety of plant-based protein. There is no need to combine plant-based protein-rich foods at the same meal to obtain enough protein, but simply eat a variety of these foods and get enough calories during the day.

WHAT ARE THE RECOMMENDATIONS FOR PLANT-BASED PROTEIN FOR CANCER SURVIVORS?

The recommendations for plant-based protein for an adult (consuming 2000 kcals/day and doing an average amount of physical activity) are 3 1/2 oz per day. See Session 5 Protein for examples of plant-based protein foods and what counts as 1 ounce equivalent in the protein foods.



SHOULD I AVOID SOY OR SOY FOODS?

The American Cancer Society (ACS) notes that soy and soy foods can be good alternatives to meat, as they are excellent sources of protein. They can also be good sources of fiber, which may reduce colorectal cancer risk. The evidence to date does not support the avoidance of soy, and there is some evidence that soy may even decrease mortality in breast cancer survivors. Thus, the National Comprehensive Cancer Network (NCCN), which is comprised of prominent cancer centers in the US, has advised that “moderate consumption of soy foods is prudent”.

TIPS FOR ADDING PLANT-BASED PROTEIN

When it comes to ideas for adding plant protein to meals and snacks, the sky is the limit! Here are some ideas to get you started:

Breakfast

- Oatmeal or whole-grain cereal topped with chopped almonds or walnuts
- Tofu scramble with broccoli, mushrooms, and soy crumbles
- Spinach smoothie with soymilk, vanilla protein powder, pumpkin seeds, and fruits

Lunch

- Chickpea “tuna” salad sandwich with sunflower seeds on whole wheat bread
- Hummus and vegetable wrap
- Red beans and rice burrito

Dinner

- Black bean chili with TVP (see More Foods to Try)
- Tofu stir-fry with kale, cauliflower, and peas

More foods to try

- Nutritional yeast adds a cheesy flavor when sprinkled onto a dish
- Textured vegetable protein is a high-protein meat replacement made from dehydrated soy flour. It can be added to soups and other dishes
- Seitan is a meat substitute made from wheat gluten with the texture of chicken





WHAT IF I ONLY EAT PLANT-BASED FOODS?

There is no substantial evidence to support the benefits of a vegan diet for cancer prevention. A vegan diet, or one without any animal products, can be nutritionally complete if it includes sources of nutrients that are often found in animal-based protein foods. See the chart as well as the list below for the key nutrients and their food sources:

- Iodine: Iodized salt
- Omega-3 Fatty Acids: Flaxseeds, walnuts, vegetable oils
- Vitamin A: Green leafy and orange vegetables
- Vitamin D: A supplement should be taken if one lives in a northern climate, wears sunscreen, or does not get adequate sun exposure

For cancer survivors who follow a vegan diet, consult your doctor or a registered dietitian nutritionist to help you ensure that you are getting enough calories, protein, and nutrients. It is strongly recommended to consult your doctor before taking any vitamin, mineral, or any other dietary supplement.

NUTRIENTS TO CONSIDER WHEN FOLLOWING A PLANT-BASED DIET

IRON, THE CARRIER OF OXYGEN IN THE BLOOD

- iron-fortified breakfast cereals
- spinach
- kidney beans
- black-eyed peas
- lentils
- turnip greens
- whole wheat breads
- some dried fruits (prunes, raisins)

CALCIUM FOR STRONG BONES AND TEETH

- calcium-fortified soymilk/breakfast cereals and orange juice
- tofu made with calcium sulfate
- some dark-green leafy vegetables (collard greens, bok choy, mustard greens)
- See section 4 Dairy for more info

ZINC FOR PROPER IMMUNE SYSTEM FUNCTION

- beans (white beans, kidney beans, and chickpeas)
- zinc-fortified breakfast cereals
- wheat germ
- pumpkin seeds

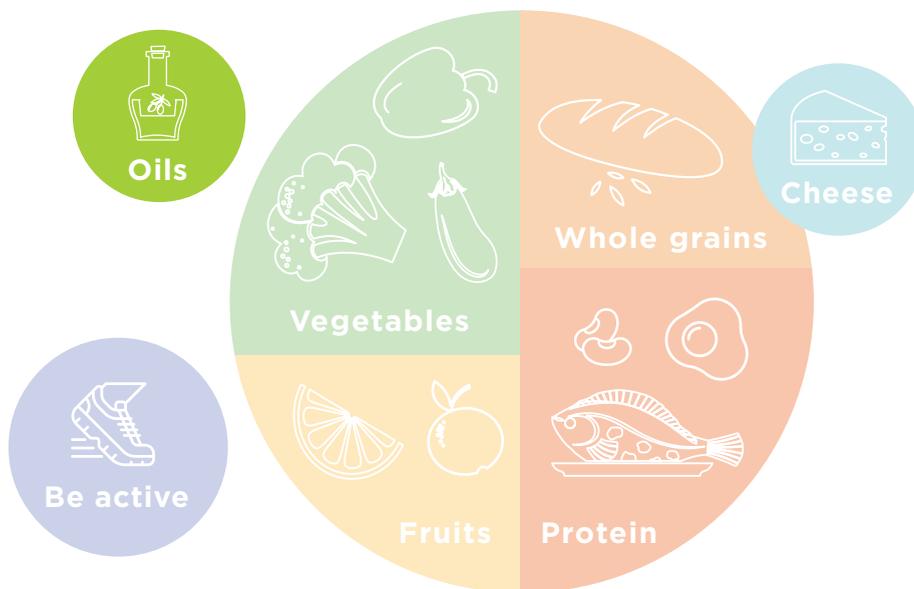
VITAMIN B12 FOR ANAEMIA PREVENTION

- fortified breakfast cereals
- soy milk
- veggie burgers
- nutritional yeast



Session 8 | Fats

Fat is an integral part of the diet, it is a good source of fat-soluble vitamins (such as vitamins D, E, K, and A) and also high in energy.



WHAT ARE THE DIFFERENT TYPES OF FATS?

There are many different types of fat and some are healthier than others. The main three types of fat are a) the unsaturated (including monounsaturated and polyunsaturated, e.g., omega-3 fatty acids) which is the good fat; b) the trans fat which is the “bad fat”; and c) the saturated otherwise “in-between type of fat”. Saturated and trans fats are less healthy and are linked with increased blood cholesterol and the risk of cardiovascular disease. In particular, excess saturated fat is one of the leading causes of mortality in all populations including cancer survivors. Whereas unsaturated and omega-3 fats are considered healthier because they can reduce blood cholesterol, support the immune, nervous, and brain system function and can regulate blood pressure. In addition, monounsaturated and polyunsaturated fats can help regulate blood sugar and insulin levels. Also, omega-3 fats can help in blood clotting prevention, regulation of heart rate and are linked with better survival after a heart attack.



WHAT ARE THE SOURCES OF FAT IN MY DIET?

The table below outlines the different types and foods where they can be sourced. Aim to choose fats more frequently from vegetable sources that are healthier and less frequently from animal sources that are considered less healthy.

TYPES OF FATS

UNSATURATED FAT / CONSUME THESE IN SMALL AMOUNTS

MONOUNSATURATED FAT

Avocados, olives, olive oil, rapeseed oil. Almonds, cashews, hazelnuts, peanuts, pistachios and spreads made from these nuts.



POLYUNSATURATED FAT

Corn oil, sesame oil, soya oil, and spreads made from those oils. Flaxseed, pine nuts, sesame seeds, sunflower seeds, and walnuts.



OMEGA-3 FAT

Oily fish such as pilchards, mackerel, salmon and sardines and plant sources such as: rapeseed, soya, flax, linseed oils, and walnuts



SATURATED FAT / LIMIT, CHOOSE UNSATURATED SOURCES INSTEAD

Processed meats like sausages, ham, burgers. Fatty meat (pork and beef fat). Hard cheeses including cheddar. Whole milk and cream. Butter, lard, ghee, suet, palm oil and coconut oil.



TRANS FAT / AVOID WHEREVER POSSIBLE

Fried foods, takeaways, snacks like biscuits, cakes or pastries. Hard margarines.





WILL EATING A LOW-FAT DIET LOWER THE RISK OF CANCER RECURRENCE?

The evidence underpinning the relationship between low-fat intake and decreased risk of cancer recurrence is not clear. However, eating too much fat, any type or source, means extra calories and this in turn can lead to weight gain and thus being overweight or obese. There is convincing evidence that being overweight or obese is linked with a higher risk of cancer occurrence, recurrence, as well as poor prognosis. However, as mentioned above, some types of fats are healthier than others. Follow the tips below to help you cut down the less healthy fat:

- Have up to 35% of total calories per day from fat. For example, if you consume 2000 kcals per day which is the reference intake for an average-sized woman doing an average amount of physical activity, a maximum of 700 kcals could come from fat. Look at the menu on page 45 for some healthy fat choices that could make this up.
- Keep your saturated fat intake to no more than 1/3 of your total fat intake; for men this would be no more than 30g/day and for women 20g/day.
- Keep trans as low as possible, less than 5g trans fats per day.
- Try to replace saturated fat and trans fat with unsaturated and omega-3 fatty acids.
- Reading nutrition facts labels on foods can help you cut down on saturated and trans fat. See Session 12 Nutrition Labelling for more details.



EXAMPLES OF FOODS THAT CONTAIN A HEALTHY AMOUNT OF BENEFICIAL FATS

MEAL

FOODS (TOTAL AMOUNT OF FAT; SATURATED FAT)

BREAKFAST

1/2 cup of oats (3g; 1.4g) + semi-skimmed milk (5g; 3g) + 1 apple + cinnamon +1 tsp. honey

LUNCH

2 slices of whole-grain bread (2g; 0) + 1 oz low-fat cheese (2g; 1g) + green leaves + 1/4 avocado (7g; 1g) + 1 cup vegetable soup (1g; 0g)

SNACK

4 tbsp. low-fat yogurt (3g; 2g) + 1/2 banana + 3 whole walnuts (9g; 1g)

DINNER

1 salmon fillet grilled (9g; 1.5g) + 1 cup quinoa cooked (3.5g; 0.4g) + balsamic sauce + homemade stir-fried vegetables with 1 tbsp. olive oil (13g; 2g)

TOTAL FAT

57.5 g total fat which is equal to 517 calories or less than 35% of 2000 kcal

13.3 g saturated fat which is <1/3 of total fat



Session 9 | Sugars & Sugary Drinks

What are natural vs. added sugars? Where are natural and added sugars in my diet?

Natural sugars are simple carbohydrates that occur naturally in foods. They are found largely in dairy, fruits, and whole grains, to some extent in vegetables and legumes, and in small amounts in nuts and seeds. Added sugars are simple carbohydrates that have been isolated, concentrated, and then added to foods for sweetness. There are many added sugars, such as maple syrup, sucrose, high-fructose corn syrup, and molasses, and they can be found in most processed food. However, they are most abundant in baked goods, sweet desserts, and sugary drinks. Additionally, fruit juice – even if it contains no added sugar – behaves like added sugar in the body because it is isolated from the whole fruits; please refer to the session on fruits and fruit juices for further information on this.

Sugar and cancer: does sugar feed cancer?

All cells in the body, including cancer cells, primarily use glucose as an energy source. There is no strong evidence that dietary sugar in particular increases the risk, progression, or recurrence of cancer. However, one should still limit the intake of added sugar: added sugars increase the caloric density of food, making it easy to consume excess calories, which are stored as fat. The evidence is strong that increasing body fatness increases the risks of several cancers.

What are the recommendations for added sugars and sugary drinks for cancer survivors?

Added sugars and sugary drinks provide calories with no other nutritional value. Therefore, it is recommended that cancer survivors consume their carbohydrates mainly from fruits, vegetables, whole grains, and legumes, limiting sources of added sugar.



What are artificial sweeteners?

Artificial sweeteners may also be referred to as non-caloric or non-nutritive sweeteners. They are sugar substitutes or sugar alcohols that can be used in place of sugar. They add sweetness to foods and beverages without contributing significant calories; an artificially-sweetened drink, for instance, will typically have less than five calories per serving. While no strong evidence suggests that artificial sweeteners are harmful, sugar alcohols such as xylitol and mannitol may cause GI upset in some individuals.

I love sweets, how can I cut down on added sugar?

Artificial sweeteners can be used in place of sugar to sweeten foods. At the bakery or grocery store, items labeled “sugar-free” or “diabetic-friendly” often utilize such sweeteners. However, beware of fat content in these items, as bakers may add more fat to further enhance flavor. For recipes at home, sweeteners such as stevia and sucralose can replace sugar. One can also experiment with halving the amount of sugar called for in a recipe and gradually lowering it even further as one’s taste buds adapt over time.

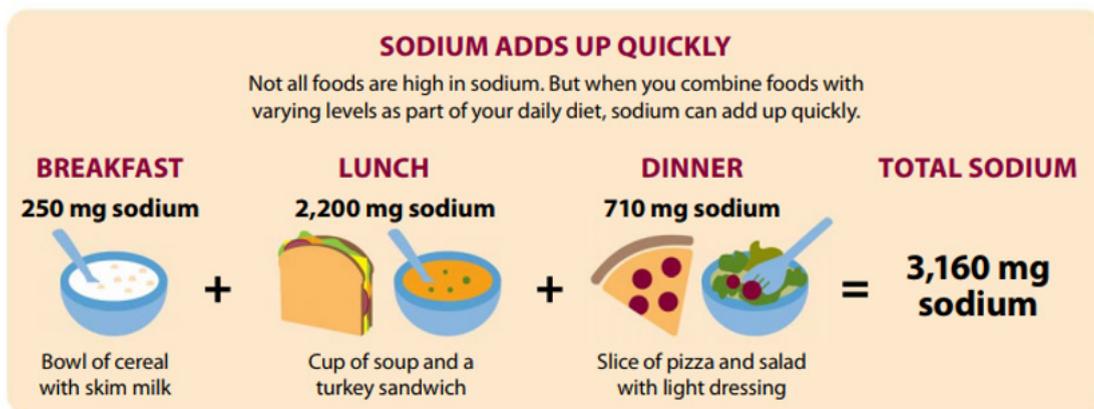
Session 10 Sodium

WHAT IS SODIUM AND WHERE IS IT IN MY DIET?

Sodium is an essential mineral that regulates body fluid balance and helps muscles and nerves to function properly. Sodium is found in packaged and prepared foods, processed meat, baking products, pizza, salad dressings, canned soups, and many restaurant meals.

SALT VS. SODIUM: WHAT'S THE DIFFERENCE?

The chemical composition of salt is sodium and chloride. One teaspoon of salt (6g) contains about 2,300 mg of sodium. The majority of Americans consume far more sodium than recommended (see menu below). Increased consumption of sodium or salt increases the risk of heart attack, stroke, congestive heart failure, kidney disease, and stomach cancer.



National Center for Chronic Disease Prevention and Health Promotion
Division for Heart Disease and Stroke Prevention





SODIUM AND HEALTH: HOW MUCH SODIUM IS A GOOD AMOUNT?

The Dietary Guidelines for Americans recommend consuming less than 2,300 mg of sodium as part of a healthy diet which is equal to no more than 6 g or 1 teaspoon of salt per day.

HOW DO I REDUCE SODIUM IN MY DIET?

- Read nutrition facts label to check the content of salt and sodium in foods; compare labels in different brands and prefer low-sodium, reduced-sodium, or no-salt-added products, such as canned soup, processed meat, crackers, all low in sodium. Note that some nutrition labels may only have sodium content. To convert sodium to salt, simply multiply the sodium amount by 2.5. For example, 2 g of sodium per 100 g is 5 grams of salt per 100 g. See Session 12 for more information on Nutrition Labeling.
- Choose fresh, frozen, or canned vegetables without added sauces high in sodium.
- Cook fresh or frozen poultry, seafood, and lean meats instead of buying prepared or ready-to-eat meals.
- Add herbs and spices, such as garlic, pepper, paprika instead of salt to meals.
- Choose foods high in potassium and low in sodium. Dietary potassium (another essential nutrient) can lower blood pressure. Examples of these foods include bananas, dried apricots, spinach, low- or no-fat yogurt, beans other than green beans, and potatoes.
- Read the nutritional information of restaurant meals before eating out and make lower-sodium choices. Look at Session 12 Nutrition Labeling for more information about reference intakes (low, medium, and high sodium content).
- Look at the menu below providing ~2000mg of sodium/day as an example.



EXAMPLE MENU FOR REDUCING SODIUM

MEAL	FOODS (SODIUM, MG)
BREAKFAST	1 cup of oats (214 mg) + semi-skimmed milk (145 mg)
LUNCH	2 slices of whole-grain bread (206 mg) + 1 oz cottage cheese (356 mg) + green leaves + smoked salmon (200 mg) + canned tomato soup with reduced sodium (54 mg)
SNACK	1 banana (1 mg)
DINNER	2 cups whole grain pasta (12 mg) + canned tomato sauce (550 mg) + turkey ground (80 mg) + salad bowl with 1/4 of a tsp salt (200 mg)
TOTAL SODIUM	1937 mg of sodium



Session 11 | Drinks

WATER

Drinking water keeps you hydrated and enables your body to function normally. You can get water from many sources, like water, fruits, vegetables, coffee, and milk. Fruit beverages, soda, and sports drinks also count towards your total water intake but they also contain added calories and sugar. The Institute of Medicine (IOM) recommends 13 cups of water for men and 9 cups for women.

Tip: Flavoring your water by adding fruits or vegetables (e.g. strawberries, lemon, cucumber) and herbs (cinnamon, mint) is a great way to increase your water intake and make it more interesting and tasty without adding extra calories or sugars.

COFFEE

Caffeine consumption may have some protective effects against some cancers. However, more research is required to determine the underlying mechanisms with regard to cancer risk.

ALCOHOL

How does drinking alcohol impact my health?

Ethanol which is the alcohol found in drinks is classified as a carcinogen as there is convincing evidence that alcohol consumption is associated with the risk of several cancers, including mouth, pharynx, larynx, esophagus, liver, breast, stomach, and colorectal. The type and amount of alcohol do not matter when it comes to cancer risk; it is the alcohol itself that causes harm not whether that alcohol is in beer or wine, or you consume less or more. In addition, drinking and smoking (tobacco), can be even more detrimental for your health. Alcohol can also lead to accidents and injuries, stroke, high blood pressure, liver disease, and pancreatitis. There is no safe limit for alcohol consumption in relation to cancer risk. However, people who follow the government guidelines for alcohol consumption have less risk of cancer development.

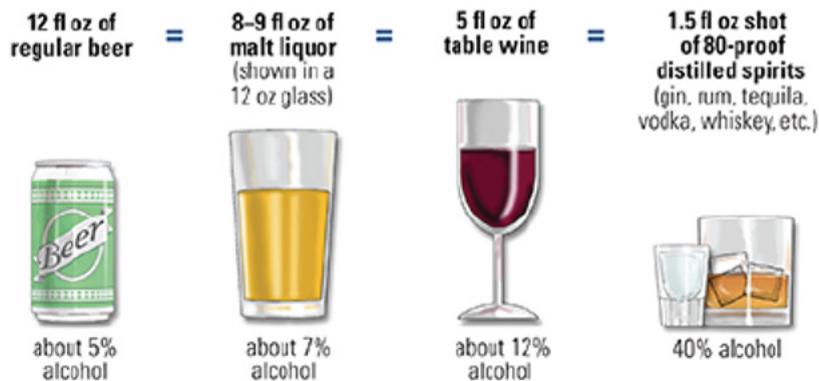


What is the recommendation about alcohol consumption for cancer survivors?

The less alcohol you drink, the lower the risk of cancer, and the gaining of “empty calories”. American Society of Clinical Oncology (ASCO) and American Cancer Society (ACS) suggests to not drinking alcohol. However, there is some evidence that moderate consumption of alcohol may be protective for cardiovascular disease and type 2 diabetes. Therefore, if you drink alcohol, limit your consumption to no more than two drinks a day for men and one drink a day for women.

What counts as one drink?

See the graphic below from the National Institute of Health:



Session 12 Nutrition Labeling

Reading nutrition labels can help you check the amount of many nutrients and especially fat, salt and sugars and assess whether they are low, medium, or high; compare different products, and choose the healthiest choice to have a more balanced diet.

HOW TO READ FOOD LABELS?

The nutrition facts panel on the back or side of food packs includes information on energy (kJ/kcal), fat, saturates (saturated fat and trans), carbohydrate, sugars, protein, salt or sodium, vitamins and minerals per serving or 100 g. For example, the image below shows the nutrition label on a slice of white bread. Follow the steps to help you read and understand the basics of nutrition facts labeling. Note that the serving size on the label may be different from the serving size you consume. In general, aim to limit saturated and trans fat, cholesterol, and sodium and get enough dietary fiber, vitamins, and minerals.

Visit the FDA website (<https://www.fda.gov/Food/LabelingNutrition/ucm274593.htm>) for more information on nutrition facts labeling.

Check Calories and calculate how much you consume. For example:

- 1 slice of bread is 90 calories.
- If you consume 2 slices of bread that means $2 \times 90 = 180$ calories.

Nutrition Facts

Serving Size 1 slice (38g)
Serving Per Container 18

Amount Per Serving

Calories 90 Cal from Fat 15

% Daily Value*

Total Fat 1.5g	2%
Saturated Fat 0g	0%
Trans Fat 0g	0%
Cholesterol 0mg	0%
Sodium 190mg	8%
Total Carbohydrate 18g	6%
Dietary Fiber 4g	16%
Sugars 3g	0%

Protein 4g

Vitamin A 10% • Vitamin C 0%
Calcium 10% • Iron 6%

*Percent Daily Values are based on a 2,000 calorie diet.

Start here and check the Serving Size

How much Nutrients per serving. For example:

- 1.5 g is the amount of fat in 1 slice of bread
- 0 g of the total fat comes saturated fat.





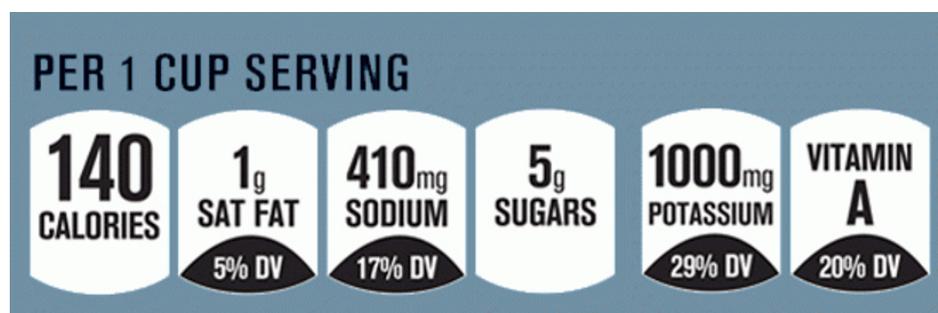
HOW DO I KNOW IF A FOOD IS HIGH IN FAT, SATURATED FAT, SUGAR OR SALT?

Look at the table below for guidelines to tell you if a food is low, medium, or high in fat, saturated, salt, or sugar. The red column indicates that the amount of certain nutrients is high, amber means medium and green column reflects that their amount is low. Therefore, the more nutrients of your food fit in the green column, the healthier the choice. Thus, aim to have plenty of those in your diet. You can also frequently consume foods with amber color. However, try to have small portions or cut down foods that conform to the red column.

All measures per 100g	LOW a healthier choice	MEDIUM most of the time	HIGH eat occasionally
Sugars	5g or less	5.1g - 15g	More than 15g
Fat	3g or less	3.1g - 20g	More than 20g
Saturates	1.5g or less	1.6g - 5g	More than 5g
Salt	0.3g or less	0.31g - 1.5g	More than 1.5g

FRONT-OF-PACK NUTRITION LABELS:

For comparing different food products at a glance, look at the front-of-pack nutrition labels (see image below) that display nutritional information about the number of grams of fat, saturated fat, sugars and salt, and the amount of energy (in kJ and kcal) in one serving size of food.





Session 13 | Supplements

We advocate for a food first approach when it comes to meeting your nutritional requirements, however, if you feel you would benefit from taking dietary supplements please discuss this with your doctor or dietitian.

WHAT ARE DIETARY SUPPLEMENTS?

The US Dietary Supplement Health and Education Act define dietary supplements as “a product intended to supplement the diet, containing one or more dietary ingredients (including vitamins, minerals, herbs, amino acids, or other botanicals), and to be taken by mouth as a pill, capsule, tablet, or liquid”.

WILL TAKING DIETARY SUPPLEMENTS PREVENT MY CANCER FROM COMING BACK?

The American Institute for Cancer Research (AICR) does not recommend dietary supplements for cancer prevention or recurrence. Research has not demonstrated the protective effects of supplemented micronutrients on cancer risk.

CAN I USE DIETARY SUPPLEMENTS DURING CANCER TREATMENT?

The American Cancer Society (ACS) does not recommend taking dietary supplements during treatment as there are several adverse effects that they can have. For example, supplements can lead to skin sensitivity and severe reactions if you are undergoing radiation therapy. If you are undergoing chemotherapy, you may be at a higher risk of drug interactions if taking supplements. Antioxidants may also interfere with cancer cell-killing treatment. If you do decide to take a supplement anyway, make sure that your doctor knows exactly what this is.



DOES DIETARY SUPPLEMENT USE BENEFIT CANCER SURVIVORS?

There is no evidence currently that dietary supplements benefit cancer survivors. However, if you are deficient in certain micronutrients or are unable to meet your requirements from the diet due to a low food intake then your oncologist or dietitian may recommend that you take a supplement. In this case, it could be of benefit to meet your requirements in the short term until you are able to consume enough food to meet these requirements.

It should also be mentioned that some individuals will benefit from supplementation for their health, these include folic acid supplements in women of childbearing age to reduce the incidence of neural tube defects and vitamin D supplements for infants, young children, pregnant and breast-feeding women.

I AM A VEGETARIAN, SHOULD I TAKE DIETARY SUPPLEMENTS TO MAKE SURE I AM MEETING MY DAILY REQUIREMENTS FOR NUTRIENTS?

Vegetarians who follow a balanced diet and ensure that nutrients such as iron, protein, and B12 that we tend to get from animal foods are consumed in other foods, should not require supplements.

ARE THERE SUPPLEMENTS TO HELP WITH SYMPTOMS RESULTING FROM TREATMENT, SUCH AS NAUSEA?

Most symptoms can be treated with medications and/or food and these have been shown to be effective, however, taking dried ginger can be a great way to help reduce nausea (250 mg four times a day).



ARE DIETARY SUPPLEMENTS SAFE?

There is a wide range of supplements available manufactured by many different companies so it is hard to say that all supplements are safe. However, if you do decide to take supplements, following the tips below, recommended by the FDA, will help you to make safer choices:

- Look for USP or NF on the label as this means that the US Pharmacopoeia standards have been followed by the manufacturer.
- Be aware that the term 'natural' does not mean safe, arsenic for example can be found naturally however it is not safe.
- Consider the name and reputation of the manufacturer.

WHAT IS THE EVIDENCE ABOUT TAKING HERBAL SUPPLEMENTS?

Because something is herbal or natural does not mean it is safe to consume. Herbal supplements may be harmful when taken by themselves, with other substances, or in large doses, e.g. kava kava, an herb that has been used to help with stress, and anxiety may cause liver damage. Supplements do not have to be approved by the federal government before being sold to the public. Also, a prescription is not needed to buy them. If you are considering taking an herbal supplement please talk to your doctor before starting it.



Session 14 | Fad Diets

DO FAD DIETS CURE CANCER?

It is really important that you are aware that there is no food or dietary pattern that will cure you of cancer. Unfortunately, the internet is full of information on how what you eat can affect your chances of developing or beating a cancer diagnosis. From superfoods to fad diets most of the information can be misleading and contradictory.

Below are some diets you may have heard of that claim to prevent or cure cancer:

- Ketogenic diet
- Alkaline diet
- Gerson Therapy

While these sound appealing and get a lot of medical attention, there is no convincing evidence that any of these diets help to prevent or improve cancer diagnosis. In a lot of cases, they are extremely dangerous as they remove whole food groups from the diet and encourage dangerous eating habits, which can lead to deficiencies and weight loss. Consequently, these could lead to poorer health outcomes and survival in cancer and make you more likely to experience toxic side effects of treatment.

DO ORGANIC FOODS PROTECT AGAINST CANCER?

The World Cancer Research Fund states that there is currently no strong evidence to support the idea that organic foods offer added protection against cancer compared to non-organic foods. Instead what is important is that vegetables, fruits, and whole grains form the central part of a person's diet, regardless of whether they are grown conventionally or organically.



HOW TO SPOT A FAD DIET?

Fad diets generally tend to:

- Promise a magic bullet to cure cancer.
- Recommend the magical properties of food or hidden ingredients in the food.
- Promote the avoidance or severe limitation of a whole food group, such as dairy products or a staple food such as wheat (and suggests substituting them for expensive doses of vitamin and mineral supplements).
- Promote eating mainly one type of food (e.g. cabbage soup, chocolate, or eggs) or avoiding all cooked foods (the raw food diet).
- Recommend eating foods only in particular combinations based on your genetic type or blood group.
- Recommend 'detoxing' or avoiding foods in certain combinations, such as fruits with meals.
- Offer no supporting evidence apart from a celebrity with a personal success story to tell.
- Sell you products or supplements.
- Base their recommendations on a single study.
- Recommended the same diet for everyone without accounting for specific needs.
- Be based on a 'secret' that doctors are yet to discover.

Remember, if it sounds too good to be true – it probably is! Currently, a plant-based diet is recommended for cancer prevention and recurrence. See Session 1 Plant-Based Diet for more information.

Session 15 | Portion Control

Use these visual portion size guides to help you control your portion sizes.

SERVING SIZES BASED ON YOUR HAND



1 fist = 1 cup

The size of your fist also = 1 medium-sized whole fruit



Palm = 3 oz. of meat, fish or poultry

*I've also heard this measurement equated to the size of a deck of cards.

Thumb (tip to base) = 1 oz. of cheese



Thumb tip = 1 teaspoon

3 teaspoons = 1 tablespoon



Index finger (1st joint to 2nd joint) = 1 inch



Handful = 1-2 oz. of snack food

I think this is a great one!
How often do we have a snack like this and eat handful after handful?
Now we know that ONE handful is enough!



1 tennis ball = 1/2 cup

1/2 your fist also = 1/2 cup

Image Source: Tufts Medical Center Weight & Wellness Center



PORTION SIZE POCKET GUIDE

Serving Size Guide

Choose healthy portions to control your calories and reduce your cancer risk.

Fill at least two-thirds of your plate with plant-based foods. The other third can be animal-based.

<ul style="list-style-type: none"> • Whole fruit • Leafy vegetables • Potatoes 	<p>1 cup (the size of a baseball)</p> 
<ul style="list-style-type: none"> • Whole grains • Chopped fruits • Chopped vegetables • Cooked beans 	<p>1/2 cup (the size of a computer mouse)</p> 
<ul style="list-style-type: none"> • Red meat • Poultry • Seafood 	<p>Three ounces (the size of a deck of cards)</p> 
<ul style="list-style-type: none"> • Nuts 	<p>1/3 cup (the size of a pool ball)</p> 
<ul style="list-style-type: none"> • Cheese 	<p>1.5 ounces (the size of four dice)</p> 

THE UNIVERSITY OF TEXAS
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Resources



Food Safety

Food safety is important for cancer survivors, particularly if you are undergoing a treatment that could suppress the immune system. Avoid eating foods that may contain unsafe and high levels of microorganisms. Refer to the American Cancer Society (ACS) Guidelines for Diet and Physical Activity and U.S. Department of Agriculture Food and Drug Administration (FDA) Food Safety for People with Cancer for tips to help minimize the risk.

TIPS FOR MINIMIZING RISK OF FOODBORNE ILLNESS

- Wash hands thoroughly with soap and water before preparing and eating food.
- Use special care in handling raw meats, fish, poultry, and eggs.
- Thoroughly clean all utensils, countertops, cutting boards, and sponges that have contact with raw meat; keep raw meats and ready-to-eat foods separate.
- Cook meat, poultry, and fish to the correct temperatures. Use a thermometer to check the internal temperature of the meat before serving.
- Milk and juices should be pasteurized.
- Store foods at low temperatures, less than 40°F to minimize bacterial growth.
- When eating out avoid salad bars, sushi, raw or undercooked meat, fish, shellfish, poultry, and eggs, as these foods may have bacterial contamination.
- Avoid raw honey.
- Check the dates on food products: A “Sell-By” date tells the store how long to display the product for sale. You should buy the product before the date expires. A “Best if Used By (or Before)” date is recommended for best flavor or quality. It is not a purchase or safety date. A “Use-By” date is the last date recommended for the use of the product while at peak quality. The date has been determined by the manufacturer of the product.
- When doing your shopping pick up perishable foods last, always refrigerate perishable foods within 2 hours of cooking or purchasing. If the temperature outside is above 90°F (32°C), refrigerate within 1 hour.

If you suspect you have a foodborne illness that can present itself with flu-like symptoms, such as nausea, vomiting, diarrhea, and fever, contact your physician immediately.





How Do I Talk to my Doctor About my Diet?

If you have any concerns about your weight, diet, or health it is important that you bring these up with your doctor. Being prepared for your visit will make it much easier to talk to the doctor about your diet and nutritional concerns.

- Make a list of concerns in order of importance to you.
- Write down all supplements being used.
- Note all changes in habit since the last visit.
- Write down all questions that you have (e.g. this might be about your current intake or something nutrition-related you read about).

If you remain concerned, ask your doctor for a referral to a registered dietitian. Registered dietitian nutritionists trained in oncology nutrition is a key part of the medical team who can help you develop a plan for good nutrition and achieve your nutritional goals.



How to Evaluate Nutrition Information for Cancer Survivors?

People with cancer tend to be very open to improving their diet and health, unfortunately, this means you are also very susceptible to false information that has become very prevalent in the media as fad diets and dietary patterns that claim to cure cancer are often promoted. Try to remember this the next time that you read or hear something that seems too good to be true. It's really important that you use information from a credible scientific source. But how can you tell? The tips below are designed to help you determine if a source of information is likely to be legitimate and evidence-based.

- If buzz words such as 'miracle' and 'breakthrough' are used on a product or in relation to a diet, be very wary.
- Maintain a healthy skepticism and remember that something is only accepted as fact when it has been proven many times, don't rely on the findings of a single study.
- Avoid relying on anecdotal information, e.g. 'it worked for my sister' or reports that are based on one person – instead, look for published scientific findings on large groups of people with cancer.
- Refer to published articles mentioned in newspaper articles to get a bigger picture view of what the research was really all about, think about the questions below to help guide you through this process:
 - Where was it published? e.g., was it in a reputable journal or a blog?
 - How many people took part in the study?
 - How does it compare to other studies in the area?
 - Who funded the study?
 - Did it establish an association or a link, rather than prove that one thing caused another?



- If looking at websites and information online consider the following:
- Who is giving you the information? *Use sources such as government agencies, hospitals, and cancer funded organizations.*
 - Whom is the information written for? *Use websites that are written for cancer survivors, which are easy to read and understand.*
 - Is the purpose of this resource listed? *Ok for websites whose goal is to inform and educate, and avoid those to promote or sell products. They may be biased or have incorrect information.*
 - Is an author or source listed? *Try to find the author or source of the information, and whether they are an expert on the topic. Websites you can trust often list the source of information as scientific journals to support the information on the website.*
 - Is the information balanced and unbiased? *Information should be balanced, have more than one viewpoint and expert opinion should be supported by scientific evidence.*

If in doubt, refer to your medical team who have extensive training in science and medicine, they have spent years training in their respective areas and undertake a huge amount of reading and extra training to remain up to date. If you have a question about a particular diet or want to understand if something could help you ask to talk to a registered dietitian.



More Resources

U.S. DEPARTMENT OF AGRICULTURE

U.S. Department of Health and Human Services and U.S. Department of Agriculture. Dietary Guidelines for Americans. 2015-2020 Dietary Guidelines. 8th Edition. [cited 2020 July 29]; Available from <https://www.dietaryguidelines.gov/current-dietary-guidelines/2015-2020-dietary-guidelines>

U.S. Department of Agriculture. ChooseMyPlate. [cited 2020 July 29]; Available from <https://www.choosemyplate.gov/>

AMERICAN CANCER SOCIETY

Rock CL, Doyle C, Demark-Wahnefried W, Meyerhardt J, Courneya KS, Schwartz AL, Bandera EV, Hamilton KK, Grant B, McCullough M, Byers T. Nutrition and physical activity guidelines for cancer survivors. CA: a cancer journal for clinicians. 2012 Jul;62(4):242-74. <https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21142>

Rock CL, Thomson C, Gansler T, Gapstur SM, McCullough ML, Patel AV, Andrews KS, Bandera EV, Spees CK, Robien K, Hartman S. American Cancer Society Guideline for Diet and Physical Activity for cancer prevention. CA: A Cancer Journal for Clinicians. 2020 Jun 9. <https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21591>

NATIONAL CANCER INSTITUTE

National Cancer Institute. Nutrition in Cancer Care (PDQ) - Patient Version. [cited 2020 July 29]; Available from: <https://www.cancer.gov/about-cancer/treatment/side-effects/appetite-loss/nutrition-pdq>

National Cancer Institute. Nutrition in Cancer Care (PDQ) - Health Professional Version. [cited 2020 July 29]; Available from: <https://www.cancer.gov/about-cancer/treatment/side-effects/appetite-loss/nutrition-hp-pdq>



National Cancer Institute. Eating Hints: Before, during, and after Cancer Treatment. [cited 2020 July 29]; Available from: <https://www.cancer.gov/publications/patient-education/eating-hints>

AMERICAN INSTITUTE FOR CANCER RESEARCH

American Institute for Cancer Research. Heal Well: Free Resource for Cancer Patients. [cited 2020 July 29]; Available from: <https://www.aicr.org/news/aicr-partners-with-meals-to-heal-livestrong-to-produce-free-nutrition-resource-for-cancer-patients/>

American Institute for Cancer Research. 10 Cancer Prevention Recommendations. [cited 2020 July 29]; Available from: <https://www.aicr.org/cancer-prevention/>

American Institute for Cancer Research. Take Control of Your Health. [cited 2020 July 29]; Available from: <https://www.aicr.org/cancer-survival/>

National Comprehensive Cancer Network

Denlinger CS, Ligibel JA, Are M, et al. Survivorship: nutrition and weight management, Version 2.2014. Clinical practice guidelines in oncology. J Natl Compr Canc Netw. 2014;12(10):1396-1406. doi:10.6004/jnccn.2014.0137 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4465236/>

National Comprehensive Cancer Network. NCCN Guidelines for Patients: Nausea and Vomiting, Version 1.2016. [cited 2020 July 29]; Available from: <https://www.nccn.org/patients/guidelines/content/PDF/nausea-patient.pdf>

National Comprehensive Cancer Network. Patient and Caregiver Resources. Life With Cancer. [cited 2020 July 29]; Available from: https://www.nccn.org/patients/resources/life_with_cancer/default.aspx

National Comprehensive Cancer Network. Patient and Caregiver Resources. Life After Cancer. [cited 2020 July 29]; Available from: https://www.nccn.org/patients/resources/life_after_cancer/default.aspx



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